SYNTHESIS OF RESEARCH RESULTS

DREDGED MATERIAL RESEARCH PROGRAM

TECHNICAL REPORT DS-78-9

ASSESSMENT OF LOW-GROUND-PRESSURE EQUIPMENT FOR USE IN CONTAINMENT AREA OPERATION AND MAINTENANCE

July 1978
Final Report

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Prepared for Office, Chief of Engineers, U. S. Army
Washington, D. C. 20314

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Containment areas	Low-ground-pressure equipment
Dredged material disposal	Soft soils
Ground flotation	Vehicle performance
Guidelines	Waste disposal sites

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Guidelines for the selection of equipment to operate in and around confined dredged material disposal areas were developed as part of the Dredged Material Research Program (DMRP). In the early phase of the DMRP, it was recognized that, in order to implement concepts for management of disposal areas to minimize adverse environmental impacts, equipment must be employed that can operate on very soft soils. In a three-phase study, the Mobility and

(Continued)

20. ABSTRACT (Continued).

Environmental Systems Laboratory of the U. S. Army Engineer Waterways Experiment Station developed the guidelines by (a) compiling a catalog of low-ground-pressure equipment, (b) analytically predicting vehicle performance, and (c) verifying the predictions of the field condition. This report is a synthesis of the three studies. The equipment catalog is included as Appendix A. Guidance for performing required soils tests is contained in Appendix B.

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PREFACE

This report is a synthesis of the results of research conducted from January 1974 to April 1977 by personnel of the Mobility Systems Division (MSD), Mobility and Environmental Systems Laboratory (MESL), U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Miss. The research was conducted as part of the Dredged Material Research Program (DMRP) sponsored by the Office, Chief of Engineers, U. S. Army, and monitored by the Environmental Effects Laboratory (EEL), WES. The studies synthesized were conducted under DMRP Work Units 2C09A, B, and C, entitled "The Development of Concepts for Using Low-Ground-Pressure Construction Equipment for Containment Area Operation and Maintenance: Equipment Catalog, Performance Predictions, and Validation Tests," respectively. This report will also be published as Engineer Manual 1110-2-5000, dated 28 April 1978.

The studies were conducted under the general supervision of Messrs. W. G. Shockley, Chief, MESL; A. A. Rula, Chief, MSD; and E. S. Rush, Chief, Mobility Investigations Branch (MIB). The studies were under the direct supervision of Messrs. N. C. Baker, Task 2C Manager, and C. C. Calhoun, Jr., Disposal Operations Project Manager, and Dr. T. A. Haliburton, Geotechnical Consultant, EEL, under the general supervision of Dr. John Harrison, Chief, EEL. This report was compiled by Mr. W. E. Willoughby, MIB, with major contributions by Messrs. Calhoun and Charles E. Green, MIB. Ms. Dorothy P. Booth was editor.

COL G. H. Hilt, CE, and COL J. L. Cannon, CE, were Directors of WES during the conduct of these studies and preparation of this report. Mr. F. R. Brown was Technical Director.

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CONVERSION FACTORS, U. S. CUSTOMARY TO METRIC (SI) UNITS OF MEASUREMENT

U. S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	By	To Obtain
cubic yards per hour	0.7645549	cubic metres per hour
degrees (angular)	0.01745329	radians
feet	0.3048	metres
feet per minute	0.3048	metres per minute
horsepower (550 ft-lbf/sec)	745.6999	watts
inches	2.54	centimetres
miles (U. S. statute) per hour	1.609344	kilometres per hour
pounds (mass)	0.45359237	kilograms
pounds (force) per square inch	6.894757	kilopascals
square inches	6.4516	cubic centimetres
tons (2000 lb mass)	907.18474	kilograms